



Snatching Victory From the Jaws of Defeat

**Some Nests
Robbed by
Predators
Still Produce
Ducklings**

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Striped skunks and other predators cause a significant loss of duck nests. In fact, in the Canadian prairies, depredation of nests can lead to species declines because the number of eggs that actually hatch isn't enough to sustain populations of mallards and other ducks. Waterfowl management practices, therefore, often focus on reducing nest depredation by trying to prevent predators from coming into contact with duck nests. Typical management strategies include the direct removal of predators (by trapping or other means), building predator exclosures (using electric fences), constructing nesting islands, and planting dense nesting cover to thwart a predator's ability to find duck nests. However, remarkably little is known about the actual fate of duck eggs once predators have found the nest. New research is suggesting that once a predator has found a nest, all is not lost.

While predators can totally destroy a nest, they don't do so every time. Many nests are only partially damaged. In these nests, just a few eggs are destroyed, and the remainder still have the potential to successfully hatch.

In a collaboration among the University of California at Davis, the California Waterfowl Association (CWA), and the California Department of Fish and Game, we conducted field studies at the

Grizzly Island Wildlife Area to better understand the importance of partial clutch loss. We were particularly interested in how frequently partial depredation of duck nests occurred and its impact on duckling production. Over a three-year period from 1998 to 2000, CWA field crews searched for and monitored more than 1,200 duck nests on the wildlife area. Partial clutch loss was a common occurrence for mallard, gadwall, pintail, and cinnamon teal nests in each year of the study.

Overall, 37 percent of duck nests were partially depredated at some point during the incubation period. Focusing just on those 864 nests that predators

actually found (i.e., experienced some type of depredation), less than half (48 percent) were completely destroyed; the remaining duck nests (52 percent) still had some eggs remaining inside the nest bowl. The fact that so many duck nests still had viable eggs remaining in the nest after a depredation attempt was surprising. Such high levels of partial clutch loss have not been reported in other studies, and waterfowl biologists and managers have rarely considered this phenomenon.

The important question now is, "Do these partially depredated nests still produce ducklings?" Yes! On average, predators destroyed only three eggs out of a typical nine-egg mallard clutch,

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◀ *Surprisingly, a gopher snake in a duck nest doesn't mean the entire clutch will be lost.*

so the potential for duckling production was still high. When we tallied the total number of ducklings that were actually produced from these partially depredated nests, we found that 22 percent of the overall mallard production came from the remaining eggs in nests that had been partially depredated. In absolute terms, this equates to over 400 mallard ducklings produced by nests that had been found but only partially consumed by predators. So although many duck nests experienced partial clutch loss, they nevertheless contributed substantially to overall duckling production at the Grizzly Island Wildlife Area.

Why might a predator only consume a portion of the eggs in a duck nest? One possibility is that small predators, gopher snakes, for example, may be physically unable to eat an entire nine-egg clutch and so leave some eggs behind. Another possibility is that larger predators such as skunks may become full and therefore leave some of the eggs uneaten inside the nest bowl. This might be more common in areas where there are large sources of alternative prey, such as small rodents. For example, in a related study conducted at the Grizzly Island Wildlife Area, we found that rodent populations buffered duck nest predation; ducks achieved higher nesting success in areas (and in years) where rodents were more abundant.

In any case, the fact that more than one-fifth of the duckling production on the Grizzly Island Wildlife Area comes from nests that have been partially depredated suggests that waterfowl management strategies could benefit by considering the outcome of nest depredation—it clearly is not an all-or-nothing event. We now know that understanding which predators are most detrimental to duck production not only depends on the number of nests a predator species might typically find, but also on the number of eggs the predator eats when it finds those nests. Predators or predator behaviors that lead to only partially consumed clutches may not influence duckling production to the same extent as predators or predator behaviors that completely destroy a nest. Such predators may be less lethal and therefore warrant less management attention. In the end, what was once thought to be a certain death sentence for duck nests—discovery by a predator—may instead result in a partial victory.

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Although two eggs were destroyed by a predator, several remain and may still produce ducklings.

Photos by Josh Ackerman

Dr. Josh Ackerman presented these findings at The Wildlife Society's Ninth Annual Conference in Bismarck, North Dakota, in September 2002 and won the Best Student Presentation Award. CWA and the Delta Waterfowl Foundation funded this project, and CWA staff provided logistical support. A complete report on partial clutch depredation and its management implications can be obtained by calling (916) 648-1406. 🦋

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